

residence. At no time during the treatment is more than a three-hour interval allowed to elapse between feedings.

The patient must spend most of the four weeks in bed. Following the hospital treatment, six meals daily must be taken for at least one year. Irritating foods, such as acids, condiments and fried foods, are forbidden.

A regimen such as outlined above will arrest the symptoms and apparently cure an astonishingly large number of patients for long periods.

After the physician has convinced himself by antiluetic treatment or by rest cure in bed, or by both, that the patient is unimproved; then and then only should a surgical operation be undertaken.

CORRECTIONS VERSUS COMPENSATION OF PHYSICAL DEFECTS.

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THE inauguration of a program of required physical training for Freshmen in Harvard College necessitated a survey of the general methods already in use. A scrutiny of the multitude of methods employed in many places readily showed there is no generally accepted agreement as to the fundamental principles involved in physical training. There was, of course, a common agreement that physical training is generally beneficial. Most people accept the dictum that the human body is definitely benefited by regular physical exercise. It is also generally agreed that the benefits of physical exercise can be traced to the mind as well as to the body. There is, however, no agreement as to the proper methods to be pursued in attaining this end. As a matter of fact the discussion and also the practice of the procedure to attain the general end of improved bodily condition is very largely concerned with a discussion of methods and fails to take into account the underlying principles. One finds that calisthenics, special gymnasium work, military drill and every form of sport are each heartily recommended as the best method of achieving beneficial physical effects from physical training.

It has seemed to us that methods were entirely secondary to the underlying principles. It has seemed to us that muscular exercise represented by so many foot pounds of work could be performed in a wide variety of ways. It also has seemed to us that the delivery

of muscular exercise was in a sense a prescription which should be based upon an intelligent examination of individuals. In other words, there is probably no blanket prescription, even though one may have to utilize, when dealing with large numbers of individuals, what may be called group prescriptions. The ideal method would be, of course, to base a prescription upon each individual case, and like any medicinal prescription, such prescription takes into account special factors as convenience, palatability, etc. Physicians do not write prescriptions for pills of such a size that they are too large to swallow, nor do they write prescriptions in fluid form for drugs which have a very bad taste which can be concealed under an appropriate coating. A prescription for physical training therefore may justifiably be governed by convenience and palatability as well as by other considerations.

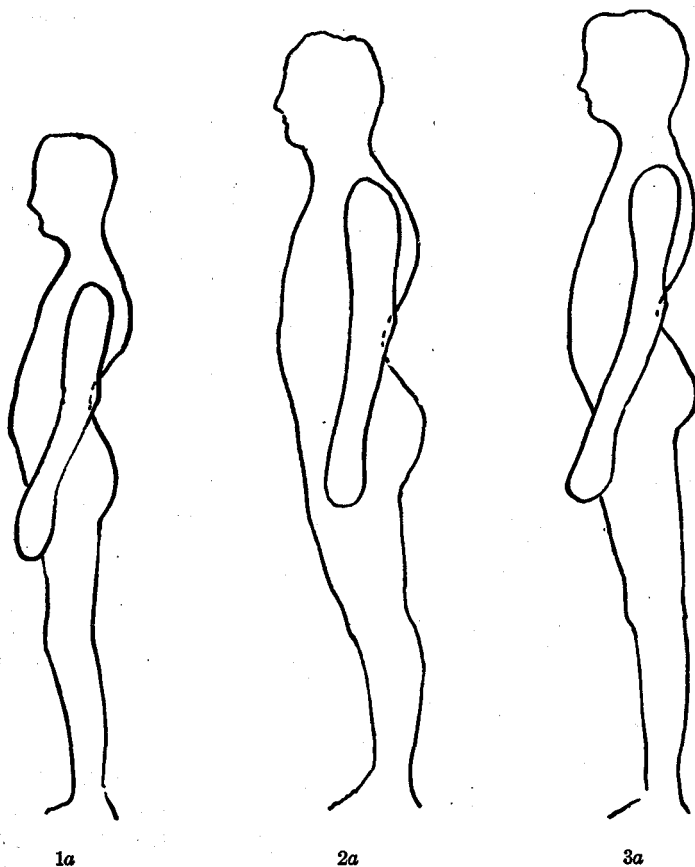
As a preliminary to our prescriptions for physical training we have made a complete medical physical examination. This examination naturally revealed a certain amount of organic defects, some of which were capable of being corrected by standard medical procedures. A certain number of these organic defects, however, might be benefited by physical exercise, even though they were permanent and not capable of correction by ordinary medical therapeutics or by physical training therapeutics. Such defects were at once classified as permanent defects not capable of correction but capable of adequate compensation. In connection with the medical physical examination the individuals were also examined from the point of view of bodily mechanics which took into consideration two factors, namely, the use of the body in the standing position and the use of the feet. The discussion of the classification of bodily mechanics and the general outline of the subsequent procedure has been made in another communication.¹ In summary it was found that 20 per cent. of Harvard Freshmen had satisfactory use of the body, while in 80 per cent. the use of the body was classified as being unsatisfactory. It is evident, therefore, that in the case of 20 per cent. of the individuals the immediate problem was merely that of delivery of physical exercise in order to maintain the satisfactory use of the body. To our minds the method of physical training is of no importance as an immediate problem in those individuals. The method of physical training is of some importance as a life problem looked at from the point of view that it is desirable to encourage individuals to develop satisfactory habits of physical exercise. From that point of view there is a definite choice of methods. It is obviously desirable to encourage some habit of physical exercise which can be maintained at least throughout the early part of adult life. But, as we have said, the immediate

¹ Brown, L. T.: *Am. Jour. Orthop. Surgery*, 1917, xv, 774. Lee, R. I., Brown, L. T., and Geer, W. H.: In press. *American Physical Education Review*.

problem in those individuals does not particularly concern methods. In the 80 per cent. of individuals who use their bodies in a more or less unsatisfactory fashion there are definitely two problems, (1) the problem of correction, and (2) the problem of furnishing physical exercise.

It is noteworthy there is no positive relationship between the muscular strength of the individual and the participation in physical exercise on the one hand and good bodily mechanics on the other. In other words, while those who use their bodies properly tended to have participated in some form of physical exercise and to have well-exercised muscles, nevertheless very muscular and very athletic individuals were also found who used their bodies in a very poor fashion. The general, though not the universal, tendency has been to accept powerful musculature and the habit of physical exercise as approximately equivalent to a satisfactory use of the body. Our investigations have failed signally to establish this contention. At the very first we were impressed with the fact that only a small portion of those who use their bodies in an unsatisfactory fashion had symptoms from this unsatisfactory use. At that time the employment of the term "compensated defects" began. It was evident that there was a definite comparison between a heart lesion and a bodily lesion. There are many individuals with heart trouble who are in the stage of a compensated heart defect. Nearly all individuals with heart lesions have an early period of compensation and a goodly proportion continue their compensation throughout life. This compensation may be of a greater or less degree. The comparison holds true of bodily defects. It is possible by good musculature to compensate for bodily defects and to maintain this compensation throughout life. This compensation is likewise of varying degree. A concrete example may be given: C. W. had infantile paralysis in early life, with a resulting marked deformity of his back. He enlisted early in the war, was accepted and served throughout the war without difficulty. He had big muscles and gave the external appearance when dressed of a large, powerful young man. After the war he came to college and took up football, which he had played in preparatory school without difficulty. Hard scrimmaging, however, brought on very definite symptoms in his back. Despite his powerful muscles it soon became apparent that he had adequate compensation for the routine work in life, even for army life, but the compensation of his back defect was not adequate to enable him to play college football. Inasmuch as his defect was structural it was not capable of correction but was merely capable of compensation. It is therefore in this instance necessary to accept compensation as the sole program. The case of F. R. may be utilized as a further illustration. F. R. is a powerful youth with big muscles who has participated in all forms of games and exercise. On examination he is classified as "D," or as having very bad

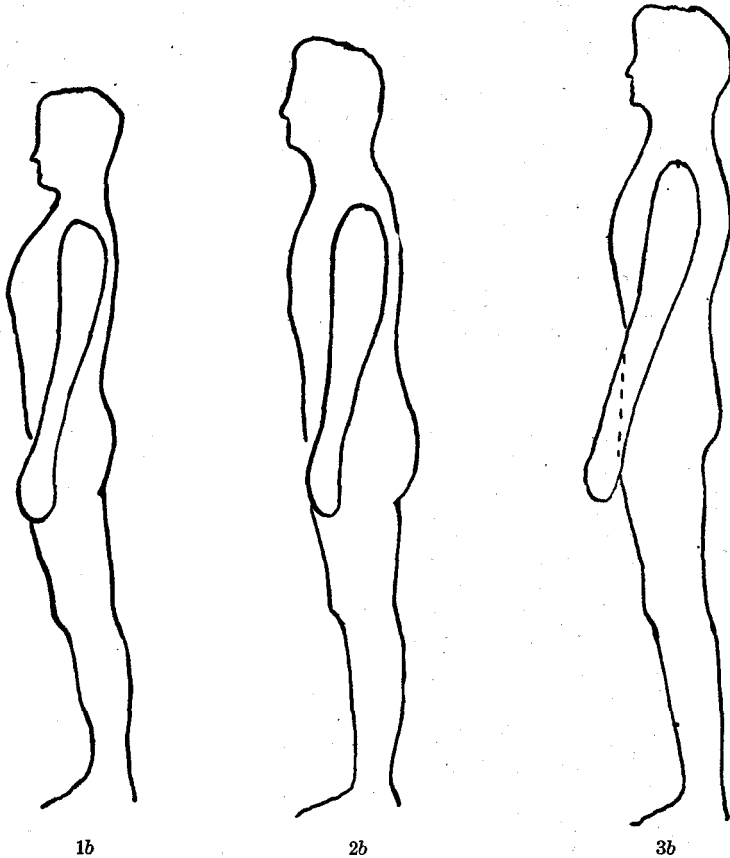
mechanical use of the body, because he has very unsatisfactory position of his body in standing, and he furthermore uses his feet in an unsatisfactory fashion. The young man has built up an excellent degree of compensation for his functional defects. When he first presented himself he was inclined to be indignant with his classification. It was of course to be expected that he had had no trouble with his back or with his feet. He was put in a group for special



instruction in regard to bodily mechanics. In the meantime he continued his usual vigorous athletic activities. He appeared one day complaining of his feet. To be sure, he had poor boots which in our experience is often the determining factor between compensation and failure of compensation in individuals who use their feet poorly. But the fact remains that despite vigorous athletic exercise and despite his powerful muscles his bodily mechanics failed because he did not use his feet correctly. He has now had his intensive

instruction in bodily mechanics, and it is hoped that he will have his bodily mechanics corrected. Upon the foundation of corrected bodily mechanics he will have physical training which will not compensate for his defects, but will establish more firmly his corrected bodily mechanics.

It has been our experience that back defects are usually fairly well compensated throughout young adult life. We believe this to



be almost unfortunate because it gives a false feeling of security, and it permits a bad habit to be very firmly fixed. Consequently, when in later life with a diminishing muscular power compensation fails, correction is often difficult and the fixation of the corrected bodily mechanics by habit and by physical exercise may be next to impossible to achieve.

In the case of the bodily mechanics of the feet the question of compensation and correction is somewhat different. It is decidedly

more simple to compensate bad mechanics of the feet by the use of tight shoes or by plates than it is to correct their bad mechanics by sheer muscular power. Consequently when compensation for the mechanical defects of the feet has been lost the individual is often led to try out a large variety of shoes and plates, with the hope of restoring it. Compensation thus restored is always a potential of future trouble unless it is followed by the fixation of correct mechanics by education, habit and physical exercise.

We believe that it is because the results of bad use of the feet are relatively so promptly evident that, on the whole, sounder opinions prevail in regard to correction versus compensation in the feet than in the back; but to our minds the same fundamental principles underlie every form of bodily mechanics. In our program we emphasize correction of all defects when present. Compensation is reserved for irremediable defects such as structural changes of the back. Following correction we insist upon the fixation of correction by physical exercise in the corrected position, and following this stage we encourage general, all-around physical exercise in order to fix more firmly the corrected habit. In other words the stages are, 1, correction; 2, fixation of correction; 3, the habit of exercise in the corrected position; 4, firm fixation of corrected habits. Our experience has confirmed this theoretical consideration because we have not found that faulty habits of bodily mechanics tend to be corrected to any extent by simple exercise. Therefore in the required course of physical training we demonstrate to each individual separately the proper method of standing even if he stands correctly. The class, as a whole, is given lectures demonstrating the principles of bodily mechanics. So far our program for further work has only embraced those who presented very bad bodily mechanics. These individuals are divided into small groups and receive intensive instruction. The result of this instruction has been very satisfactory, as will be seen from the accompanying illustrative charts. Fig. 1a, 2a, 3a, positions assumed by three students at the time of their first examination. Fig. 1b, 2b, 3b, positions assumed by same students after receiving instruction in bodily mechanics when told to stand as well as they could.

These tracings were taken at random from a large series and bring out the fact that although the student started with no knowledge of correct bodily mechanics, at the end of his course of instruction he not only understood the theory of it but could give a practical demonstration.

It is not always possible to achieve satisfactory success with each individual, but it is exceptional that we have not been able to change those classified as "D," or very bad mechanical use of the body into a classification of "B," which means good mechanical use of the body. It will be noted that we have concerned ourselves mainly

with the 25 per cent. who presented the very bad mechanical use of the body. Since the program was tentative and experimental it was decided to await the result of a year's experience in order to see what a single personal demonstration and general lectures would do for the big group of young men classified as "C" who had moderately unsatisfactory mechanical use of the body. While it is true that a considerable number of these were energetic enough to correct themselves, nevertheless the general error of preferring compensation to correction was the more common. We now believe that it is necessary to broaden the intensive instruction so as to include the "C" group as well as the "D" group. This will be put into operation in another year.

We would like to emphasize the importance of a proper nomenclature in any system of physical training. A discussion which involves nomenclature has certain obvious advantages and disadvantages. In general the disadvantages far outweigh the advantages. After all the purpose of nomenclature is to clarify one's conception. Nomenclature *per se* has no particular value. It is only of use when utilized as a means to an end. Too often nomenclature becomes the end and not the means, and a discussion of nomenclature becomes distasteful because it is synonymous with quibbling. Also, it not infrequently suggests that a knowledge of nomenclature is a knowledge of the subject-matter concerned. In the present discussion it is believed that the nomenclature as outlined in the title, corrections or compensation of physical defects, is of some real assistance in the understanding of the subject-matter concerned.

In order to be really successful a physical training program must be based upon careful examination, and this careful examination must be directed toward bodily mechanics with as much care as it is directed toward the heart. Actual structural defects which cannot be corrected and which require compensation are just about as frequent as organic disease of the heart, which likewise cannot be corrected and must be compensated. Judging by our statistics we may assume that the majority of individuals have habits of poor mechanical use of the body, and if left to themselves these individuals may increase compensation but will not correct their defects. It is important that the actual program of physical training be based upon an examination of bodily mechanics. It is possible to give prescriptions for groups of individuals as a result of this examination. All individuals who have poor mechanical use of the body will require as a part of their prescription a preliminary correction. One may expect to see fairly quickly the demonstration of the advantage of correction over compensation in the mechanical use of the feet that is fairly well explained. The same general principle holds true of the mechanical use of the back, but because compensation usually persists for a number of years the untoward effects in the

form of definite symptoms from the bad mechanical use of the back are usually slow in coming. It is possible, however, to correct bad mechanical use of the back, and it is possible to fix rather firmly good habits even in the most unpromising individuals.

We are not prepared at this time to support the theory that many ailments of the nervous system or of the gastro-intestinal system are related to bad mechanical use of the body. We can, however, state that there is a frequent association of such symptoms with the mechanical use of the body. Our investigations have shown that albuminuria of young men which is not a true nephritis is associated almost exclusively with very bad mechanical use of the body. We believe that a sufficient case can be made out for correction as against compensation on the basis of actual ailments of the back and feet, generally conceded to be due to faulty use of the body even without the addition of possible symptoms connected with other organs.

We believe that physical training can only accomplish what it is expected to accomplish when it is based upon satisfactory fundamental principles and when bodily mechanics is regarded in a similar fashion as the disturbances of any other system of the body are regarded.

A CLINICAL STUDY OF WASSERMANN-FAST SYPHILIS, WITH SPECIAL REFERENCE TO PROGNOSIS AND TREATMENT.¹

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THE so-called Wassermann-fast syphilitic infection will probably attract increasing attention as the time during which modern methods of treatment have been employed lengthens and methods of intensifying the sensitiveness of the test demonstrate a smaller and smaller proportion of permanent negatives. A recent survey of the literature following a study of a group of apparently Wassermann-fast cases under treatment in the Section of Dermatology seems to suggest that while Wassermann-fastness is a type of syphilologic tradition, relatively little attention has been paid to critical clinical study of these cases, with a view to ascertaining the types of syphilis that may be expected to give rise to resistant positive reactions in the blood and whether the superficially asymptomatic character of

¹ Presented before the Central Interurban Clinical Club, Rochester, May, 1920.